

MOUNTING ASSEMBLY WITH INTUMESCENT LAYER FOR DOWNLIGHTERS

The present invention relates to assemblies and more particularly to lighting assemblies of the so-called downlighter variety or embedded loud speakers.

In view of the heat generating capacity of lighting assemblies, they are a potential source of fires. However, a conventional suspended lighting assembly extending from a mounting rose in the ceiling is relatively safe. More recently use of downlighter lighter assemblies has become more fashionable as well as convenient in terms of allowing lower acceptable roof heights etc. Unfortunately, such downlighter assemblies require provision of a relatively wide aperture in the ceiling and/or roof space in order to accommodate the lighting fitting. Such apertures render it difficult to contain a fire in a room or for that matter a fire generated by failure of the light fitting itself. It will be understood that an aperture provides a pathway through which smoke and flames can pass. Ideally a closed barrier should be presented to a fire in order to at least contain it and preferably smother the fire through denial of oxygen.

In accordance with the present invention there is provided an assembly comprising an expansion combination comprising an intumescent layer and a backer member retained by retention means for expansion in use, when subjected to a predetermined temperature, towards an opening in a panel and/or cover in order to close that opening whereby the expansion combination is secured by a one part of the retention means and the cover and/or panel secured by another part of the retention means.

Preferably, the expansion combination includes a pocket secured to the backer member and extending downward towards the opening.

Preferably, the expansion combination includes a cover layer to confine and/or protect the intumescent layer.

Typically, the backer member is relatively resilient and/or stable to provide a base for projecting expansion of the intumescent layer. Possibly, the backer member is formed from a fabric, paper or plastics material.

Normally, the type and/or thickness of the intumescent material in the intumescent layer depends upon the distance between the position at which the expansion combination is retained and the opening. Possibly, more than one expansion combination is provided in the assembly.

Preferably, the cover layer is perishable and/or flexible and/or displaceable in order not to inhibit expansion of the intumescent layer towards the opening or closure of the opening.

Normally, the intumescent and the backer layer of the expansion combination, along with the cover layer when provided, are secured together by securing means. Typically, the securing means may be perishable and/or rupturable stitching or adhesive or displaceable clips.

Preferably, the retention means comprises a down member which retains the expansion combination above the opening. Typically, the down member includes a ledge for the expansion combination. Normally, the ledge is provided by a bend or kink in the down member.

Preferably, the retention means includes an up member to secure the panel and/or cover.

Preferably, the down member and up member include respectively juxtaposed or overlapping ends to form when secured together the retention means. Normally, adjustment means is provided between the down member and the up members to allow adjustment of the length of the retention means. Typically, the adjustment means comprises a screw thread bolt. Normally, a bias, such as a compression or expansion spring, is provided between the up member and the down member. Typically the bolt extends through the bias. Advantageously, the juxtaposed or overlapping ends are perpendicular to their

respective up member and down member.

Advantageously, the adjustment means can be adjusted dependent upon a depth of thickness of a ceiling or structure into which the assembly is to be mounted. Generally, the retention means will be made from a metal or plastics material.

Also in accordance with the present invention there is provided a mounting arrangement for an assembly comprising retention means of a down member and an up member with adjustment means between them, the down member having a mounting end for attachment to a support structure, the up member and the down member having respective juxtaposed or overlapping ends for adjustment means to allow the effective length of the mounting arrangement to be varied as required for different specific installations of an assembly.

Typically, the up member has a cover end to secure a cover or panel.

Normally, more than one retention means are provided to act in co-operation for the assembly. Generally, the juxtaposed or overlapping ends are flats upon which the adjustment means acts.

Typically, the cover end is secured to the cover or panel by securing means such as a screw fastening or pot rivet or other mechanical fixing or a recess or by ledge engagement. Possibly, the securing means will release when subjected to a temperature of a predetermined value such as during a fire.

Normally, the adjustment means includes lock means to lock the desired adjustment of the adjustment means.

Typically, the retention means will cooperate with any ventilation opening in a cover to facilitate heat dissipation caused by normal operation of a lighting element.

appropriate to a cover 8 for an opening 9 in the ceiling 2. Typically, the cover 8 may also include ventilation openings (not shown) along with a ventilation gap between the cover 8 and the opening 9 such that the heat generating lighting elements or other electrical device located within the cavity 10 of the assembly 1 does not overheat or present a fire hazard. It will also be understood that the aperture or cavity 7 may also be open to allow heat dissipation radially and horizontally into the space between the ceiling 2 and support structure 3. However, in such circumstances, in accordance with the present invention a pocket is normally provided around the assembly between the ceiling panel 2 and the support structure 3.

In accordance with the present invention an adjustment mechanism 6 is provided between the retention members 4, 5. Generally, the gap 11 between the ceiling 2 and support structure 3 may be different in specific installation locations for the assembly 1. Thus, to achieve appropriate assembly it is necessary to provide for at least lengthways adjustment of the retention members 4, 5 combination length.

Fig. 2 illustrates one embodiment of an adjustment mechanism 6 in accordance with the present invention. Essentially, the respective down member 4 and up member 5 present juxtaposed or overlapping end flats 21, 22. Thus, a screw thread rod or bolt 23 which extends through apertures (not shown) in the flats 21, 22 can be adjusted and so the combination length of the combination of members 4, 5 varied to that required for a particular installation. A bias is provided between the flats 21, 22 in order to ensure retention of the desired spacing and so combination length of the members 4, 5. This bias takes the form of a compression or extension spring 24 which acts to push the flats 21, 22 diametrically away from each other against locking members 25, 26 secured at each end of the rod or bolt 23.

It will be appreciated that by use of the bias 24 temporarily the up member 5 may be pulled or displaced downwards in the direction of arrow head A against the bias 24 such that, with a cover end 27 (Fig. 1) only secured to the cover 8, it may be possible to displace that cover 8 in order to gain access to the

Claims

- 5 1. An assembly comprising an expansion combination comprising an
intumescent layer and a backer member retained by retention means for
expansion in use, when subjected to a predetermined temperature, towards an
opening in a panel and/or cover in order to close the opening whereby the
expansion combination is secured by one part of the retention means and the
10 cover and/or panel secured by another part of the retention means.
2. An assembly as claimed in claim 1 wherein the expansion combination
comprises a pocket secured to the backer member and extending downwards
towards the opening.
- 15 3. An assembly as claimed in claim 1 or claim 2 wherein the expansion
combination includes a cover layer to confine and/or protect the intumescent
layer.
- 20 4. An assembly as claimed in any of claims 1, 2 or 3 wherein the backer
member is relatively resilient and/or stable to provide a base for projection
expansion of the intumescent layer.
5. An assembly as claimed in any preceding claim wherein the backer
25 member is formed from a fabric, paper or plastics material.
6. An assembly as claimed in any preceding claim wherein the type and/or
thickness of the intumescent material in the intumescent layer depends upon the
distance between the position at which the expansion combination is retained and
30 the opening.
7. An assembly as claimed in any preceding claim wherein the assembly
incorporates more than one expansion combination.

8. An assembly as claimed in any preceding claim wherein the cover layer is perishable and/or flexible and/or displaceable in order not to inhibit expansion of the intumescent layer towards the opening or closure of the opening.

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9. An assembly as claimed in any preceding claim wherein the intumescent layer and the backer layer of the expansion combination, along with the cover layer when provided are secured together by securing means.

10. An assembly as claimed in claim 9 wherein the securing means is perishable and/or rupturable stitching or adhesive or displaceable clips.

11. An assembly as claimed in any preceding claim wherein the retention means comprises a down member which retains the expansion combination
15 above the opening.

12. An assembly as claimed in claim 11 wherein the down member includes a ledge for the expansion combination.

13. An assembly as claimed in claim 12 wherein the ledge is provided by a
20 bend or kink in the down member.

14. An assembly as claimed in any preceding claim wherein the retention means includes an up member to secure the panel and/or cover layer when
25 provided.

15. An assembly as claimed in claim 14 wherein the down member and the up member include respectively juxtaposed or overlapping ends to form when secured together the retention means.

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16. An assembly as claimed in claim 14 or 15 wherein adjustment means is provided between the down member and the up member to allow adjustment of the length of the retention means.

17. An assembly as claimed in claim 16 wherein the adjustment means comprises a screwthread bolt.

5 18. An assembly as claimed in any of claims 14 to 17 wherein a bias, such as a compression or expansion spring, is provided between the up member and the down member.

10 19. An assembly as claimed in claim 17 or claim 18 when dependent upon claim 17 wherein the bolt extends through the bias.

20. An assembly as claimed in any of claims 14 to 19 wherein the respective up member and down member have juxtaposed or overlapping ends which are substantially perpendicular.

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21. An assembly as claimed in claim 16 and any claim dependent thereon wherein the adjustment means can be adjusted dependent upon a depth of thickness of a ceiling or structure into which the assembly is to be mounted.

20 22. An assembly as claimed in any preceding claim wherein the retention means is made from a metal or plastics material.

25 23. A mounting arrangement for an assembly comprising retention means including a down member and an up member with adjustment means between them, the down member having a mounting end for attachment to a support structure, the up member and the down member having respective juxtaposed or overlapping ends for adjustment means to allow the effective length of the mounting arrangement to be varied as required for different specific installations of the assembly.

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24. A mounting arrangement as claimed in claim 23 wherein the up member has a cover end to secure a cover or panel.

25. A mounting arrangement as claimed in claim 23 or claim 24 wherein the arrangement incorporates more than one retention means to act in cooperation for the assembly.

5 26. An arrangement as claimed in any of claims 23 to 25 wherein the juxtaposed or overlapping ends are flats upon which the adjustment means acts in use.

10 27. An arrangement as claimed in any of claims 24 to 26 wherein the cover end is secured to the cover or panel by securing means such as a screw fastening or pop rivet or other mechanical fixing or a recess or by ledge engagement.

15 28. An arrangement as claimed in claim 23 to 27 wherein the retention means is arranged to release when subjected to a temperature of a predetermined value such as during a fire.

20 29. An arrangement as claimed in any of claims 23 to 28 wherein the adjustment means includes lock means to lock the desired adjustment of the adjustment means.

30. An arrangement as claimed in any of claims 23 to 29 wherein the retention means cooperates with a ventilation opening in a cover to facilitate heat dissipation caused by normal operation of a lighting element.

25 31. An assembly as claimed in any of claims 1 to 22 wherein the opening which is closed by the expansion combination is one or more ventilation openings of a cover and/or an aperture in a cavity to accommodate the assembly.

30 32. An assembly substantially as hereinbefore described with reference to the accompanying drawings.

33. A mounting arrangement substantially as hereinbefore described with reference to the accompanying drawings.

34. Any novel subject matter or combination including novel subject matter disclosed herein, whether or not within the scope of or relating to the same invention as any of the preceding claims.